
WADS'03 Panel

Fault Tolerance & Self Healing

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What is Self Healing about ?

- A new name for fault tolerance
- However,
 - Fault tolerant systems have for long been:
 - Systems *fixed* at design time
 - Enforce correctness *via* rigorous design (formal methods)
 - Safety-critical systems
 - Dedicated design/software/hardware



New features of today's systems

- Increasingly consumer-oriented

- Highly dynamic

- Evolving user requirements
- Evolving environment
- Quality of service
- Mobility

➤ The system must deliver the *advertised functionality*, in all situations, possibly with different levels of QoS



Self healing = Fault tolerance for dynamic systems ?

- Some statements at WOSS'02
 - Dealing with imprecise specification and uncontrolled environment [Shaw]
 - Dealing with adaptation / reconfiguration [Garlan *et al.*, Medvidovic *et al.*] according to the system's dynamics



Why should adaptation be FT / SH

- Need for reconsidering the design of software systems that are dynamic in nature
 - System's standard specification that takes into account the system's dynamics
 - System's correctness according to both functional behavior and provided level of QoS
 - Fault tolerance when standard specification is not met
 - Standard vs exceptional ?
 - E.g., Disconnection in mobile systems

